

Director

Department of Pesticide Regulation



MEMORANDUM

TO: Lisa Quagliaroli

> Senior Environmental Scientist **Environmental Monitoring Branch**

FROM: Vaneet Aggarwal, Ph.D. *Original* signed by

Environmental Scientist

916-445-5393

DATE: January 27, 2011

SUBJECT: DETERMINATION IF CALIFORNIA DEPARTMENT OF FOOD AND

AGRICULTURE'S CHLOROTHALONIL METHOD (EMON-SM-05-020)

MEETS THE "UNEQUIVOCAL DETECTION" CRITERIA

BACKGROUND

The Pesticide Contamination Prevention Act (Food and Agricultural Code [FAC] sections 13141 et seq.) was passed in 1985 to prevent further pesticide pollution of ground water which may be used for drinking water supplies. FAC section 13149 specifies the conditions under which a pesticide is considered "found" in ground water or soil, and thus subject to formal review as specified. As originally adopted, FAC subsection 13149(d) specified that a finding of a pesticide shall be verified by a second analytical method or a second analytical laboratory approved by the Department of Pesticide Regulation (DPR). However, the law was amended by Senate Bill 810 in 1995 to allow a finding of a pesticide in ground water or soil to be based on a single analytical method conducted by a single analytical laboratory, if the analytical method provides unequivocal identification of a chemical. Following this change, criteria were established to identify methods providing unequivocal identification of a chemical in a February 13, 1996, DPR memo entitled "Definition of unequivocal detection method for the purposes of Senate Bill 810 (Biermann, 1996)."

ISSUE

Does the analytical method for Chlorothalonil used by the California Department of Food and Agriculture (CDFA) meet the definition of an unequivocal detection method?

DISCUSSION AND RECOMMENDATION

CDFA Center for Analytical Chemistry, Environmental Analysis Section (method EMON-SM-05-020) uses an UPLC/MS/MS system for the detection of fungicide Chlorothalonil. Prior to injection of sample into the UPLC/MS/MS apparatus, the well water samples are cleaned and extracted. Consequently the well water samples generally contain a minimal amount of background/matrix interference, facilitating the goal of unequivocal detection.

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In CDFA method EMON-SM-05-020 for Chlorothalonil analysis, the first mass spectrometer is set to reject all species with mass/charge values that do not correspond to the analyte's molecular ion eluting at that analyte's particular retention time. Each molecular ion is then fragmented in the next stage, and the final mass spectrometer quantifies the fungicide based on either one or two characteristic fragments. Three stepwise factors are used to eliminate possible interferences for Chlorothalonil: chromatographic retention time, Chlorothalonil molecular ion mass and specific daughter ion mass. Therefore, analysis of the Chlorothalonil by this method is highly specific and qualifies for the unequivocal detection designation. Therefore, analysis by a second laboratory or a second method is not necessary for well water samples analyzed for Chlorothalonil.

APPROVED:	Original signed by	Date:	01/28/2011
	Lisa Quagliaroli Senior Environmental Scientist	Date. <u>-</u>	
APPROVED:	Original signed by Lisa Ross, Ph.D. Environmental Program Manager		01/28/2011
APPROVED:	Original signed by John S. Sanders, Ph.D. Environmental Program Manager		01/28/2011

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REFERENCES

Biermann, H. 1996. Memorandum to Kean S. Goh, Ph.D. "Definition of 'unequivocal detection methods' for the purposes of Senate Bill 810."